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INSECT FALLOUT ON SNOW IN THE SNOWY MOUNTAINS, NEW SOUTH WALES

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Abstract

Seventeen species comprising insect fallout on snow fields at about 1,500 m in the Kiandra area of the Snowy Mountains, collected August, 1972 are listed. Flame Robins (*Petroica phoenicea*) were observed feeding on torpid insects on the snow.

Introduction

Living but inactive chilled insects have been observed on snow surfaces in alpine areas in many regions (Mani 1962; Edwards 1972). They are frequently derived from dispersing or migrating insects which are carried into cold air where flight cannot be sustained, allowing them to fall to the snow surface. They may also be deposited as a result of downdraft, and under calm conditions, dispersing insects may be attracted to the surface of snow by a "light trap" effect (Kaisila 1952; Edwards 1972). This fallout fauna provides food for alpine animal communities, and Swan (1968) has proposed the term *aeolian zone* for alpine regions which support a fauna that depends for food on wind-transported prey.

Results

The insects listed below were collected 26-27 August 1972 from open snow surfaces in mixed snow gum/grassland vegetation between Kiandra and Happy Jacks Creek, and return, a traverse totalling approximately 55 km at an altitude of about 1,500 m. No attempt was made to sample quantitatively, and only the more commonly observed insects were collected. The abundance varied considerably between zero and about 5 insects/10m². Most insects were observed before 9 a.m. and after 4 p.m., *i.e.* during the first 2-3 hours after sunrise, and the 1-2 hours before sunset. It appeared that the midday and early afternoon sun provided sufficient warming to allow previously immobilized species to take off.

On the afternoon of 27 August 1972, a clear, warm and calm day, the sun set while the ski party crossed an extensive open flat area south of Kiandra. Within a few minutes of sundown, increased numbers of insects were observed on the snow, and at this time, several Flame Robins (*Petroica phoenicea*) appeared on the snow where

they fed on the torpid insects. Robins were also observed feeding on the insect fallout in the early morning.

The following list includes all species collected.

Species		Frequency
THYSANOPTERA	det. L. A. Mound	
Phlaeothripidae		
<i>Idolothrips spectrum</i> Haliday		occasional
HETEROPTERA	det. T. E. Woodward	
Lygaeidae		
<i>Nysius vinitor</i> Bergroth		frequent
Nabidae		
<i>Nabis nigrolineatus</i> (Distant)		frequent
HOMOPTERA	det. V. Eastop	
Aphididae		
<i>Macrosiphum (Sitobion) fragariae</i> Walker		few
NEUROPTERA	det. E. F. Riek	
Hemerobiidae		
<i>Psycobiella fusca</i> Tillyard		few
<i>Micromus tasmaniae</i> Walker		few
COLEOPTERA	det. C. Watt	
Tenebrionidae		
<i>Adelium</i> sp. near <i>calosomoides</i> (Kirby)		1 found
HYMENOPTERA	det. J. C. Cardale	
Braconidae, Braconini		
1 sp. unident.		1 found
Ichneumonidae		
<i>Netelia</i> sp.		occasional
Apidae		
<i>Apis mellifera</i> Linnaeus		1 found
LEPIDOPTERA	det. I. F. B. Common	
Noctuidae		
<i>Agrotis munda</i> Walker ♀		frequent
DIPTERA	det. D. H. Colless	
Tipulidae, Limoniinae		
1 sp. unident.		frequent
Chironomidae		
<i>Paraheptagyia tonnoiri</i> (Freeman)		frequent
Sciomyzidae		
<i>Dichaetophora</i> prob. <i>punctipennis</i> Mall.		frequent
Lauxaniidae		
<i>Trigonometopsis binotatus</i> (Thoms.)		frequent
<i>Poecilohetaerus schineri</i> (Hendel)		few
Ephydriidae		
<i>Hydrellia victoriae</i> Cresson		frequent

Discussion

The 17 species of insect were alive when collected, but all were torpid and unable to fly, although several of the Diptera were able to

do so after brief warming in the hand. These insects provide an easily accessible and highly conspicuous source of food for birds.

Utilization of snowbound insects by birds has been noted by Mani (1962); further observations have been made in the Alaskan tundra (Edwards 1972) and elsewhere (e.g. Pattie and Verbeek 1966). The brief observations on the Flame Robins can give no indication of the significance of snow-surface insect predation in feeding patterns of the robin, but it seems probable that the morning and dusk feeding on insect fallout provides a significant part of the daily food intake.

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References

- Edwards, J. S., 1972. Insect fallout on Alaskan snow. *Arctic and Alpine Res.* 4: 167-176.
- Kaisila, J., 1952. Insects from Arctic mountain snows. *Ann. Ent. Fennici* 18: 8-25.
- Mani, M. S., 1962. *Introduction to high altitude entomology*. Methuen, London.
- Pattie, D. L. and Verbeek, N. A. M., 1966. Alpine birds of the Beartooth Mountains. *Condor* 68: 167-76.
- Swan, L. W., 1968. Alpine and aeolian regions of the world. In Wright, H. E. and Osburn, W. H. (eds.) *Arctic and Alpine Environments* Vol. 10, Proc. VII Congress INQUA (Indiana Univ. Press., Bloomington): 29-54.

A FURTHER SYDNEY RECORD OF THE EVENING BROWN BUTTERFLY *MELANITIS LEDA BANKIA* (FABRICIUS) (LEPIDOPTERA: NYMPHALIDAE)

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Although a number of apparent sightings of the Evening Brown *Melanitis leda bankia* (Fabricius) have been made within the Sydney district, Haines (1972) records the only three specimens actually taken. I wish to add a further record, that of a male taken by the author at the above address on 28th August, 1969. The specimen was of the winter form and in very poor condition. It is interesting to note that Avalon Beach is very near Bayview, the locality where Mr. Haines took his three specimens.

Acknowledgement

I wish to thank Mr A. B. Rose for confirming the identification of the above specimen.

Reference

- Haines, L. C., 1972. Some interesting butterfly captures made at Bayview, N.S.W. *Aust. ent. Mag.* 1(1): 5-6.